

7 FRACTURE MATCH	Page 1 of 2
Division of Forensic Science TRACE EVIDENCE PROCEDURES MANUAL	Amendment Designator:
	Effective Date: 31-March-2003
<p style="text-align: center;">7 FRACTURE MATCH</p> <p>7.1 Analytical Approach</p> <p>Items being submitted for fracture match, or physical fit, analysis include a variety of materials. Typically, when a material having reasonable rigidity breaks, is cut or is torn, irregularities appear at the break which may create pieces analogous to those of a “jigsaw puzzle”. When matching pieces are found that can be physically fitted back together again, the examiner will say with absolute certainty that the matching pieces were at one time a single unit.</p> <p>7.2 Purpose</p> <p>To physically fit evidentiary materials back together along fractured edges. When accomplished, this examination provides conclusive evidence that the materials were at one time a single unit.</p> <p>7.3 Analytical Procedures</p> <p>7.3.1 Spread a clean piece of paper on the examination surface.</p> <p>7.3.2 Examine each item of evidence visually to determine the correct orientation of the pieces. Begin with matching a surface (e.g., the outer color coat of paint chips, the fluorescing surface of float glass pieces, the smooth or finished surface of plastic fragments, etc.). After the pieces are marked for identification and “sided”, contours, edges, colors, surface markings and so forth, can be used to help align pieces correctly. It is often helpful to fit together pieces of a given item to themselves (“knowns”) and then fit them to additional items (“questioned”) in the case.</p> <p>7.3.3 Observe all orientations of the fit. Scratches, stains or defects that traverse the broken, cut or torn edge serve to reinforce the physical fit conclusion.</p> <p>7.3.4 Observe the matching sides “on end”. Matching hackle marks and defects may be seen and serve to reinforce the physical fit conclusion.</p> <p>7.3.5 Matching fabric pieces involves examination of general size and shape, weave, fiber type and twist, colors, long versus short threads and thread counting.</p> <p>7.3.6 When matching flexible materials (e.g., fabric, tape and some plastics), care must be taken to account for edge rolling, stretching, and twisting. Use of double stick tape on a rigid plate may be useful to stabilize the edge during comparison and to reduce the effects of distortion of stretching or twisting.</p> <p>7.4 References</p> <p>7.4.1 Saferstein, Richard, “Criminalistics: An Introduction to Forensic Science”, Prentice-Hall, Inc., 1995, pp. 65-67.</p> <p>7.5 Documentation</p> <p>Along with case file notes, documentation for fracture match cases will include one or more of the following:</p> <ul style="list-style-type: none"> • A photocopy of the fracture match, if the pieces are suitable • Photographs of the fracture match • Detailed sketches of the fracture match <p>7.5.1 Each of the above is to be documented within the case notes and should have legible markings for identification which are also described in the notes if not obvious from the photocopy or photograph. These notations may be made directly on photocopies, photographs or sketches in the notes.</p>	

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7.5.2	The method of documentation should be appropriate for each individual case and will be left to the discretion of the examiner.	
7.6 Report Wording		
7.6.1	Results are reported in the manner established by the Directors and issued in an e-mail dated June 20, 2001 the content of which is reprinted below.	
7.6.2	The reporting of “fracture match” results falls into 3 categories: positive, inconclusive with additional testing to be conducted (in most situations) and disassociation. It is recognized that some minor variations may occur to these statements.	
7.6.2.1	Positive: Items __ and __ were physically fitted together and were at one time a portion of a single unit.	
7.6.2.2	Inconclusive with additional testing to be conducted: Items __ and __ could not be physically fitted together. The results of additional examinations will be reported separately.	
7.6.2.2.1	In a few situations further testing will not be possible and, therefore, this statement would not be applicable.	
7.6.2.2.2	If the additional testing is conducted by the same Trace Evidence examiner use the first sentence and include what testing was conducted and the conclusion that was reached. For example: Items __ and __ could not be physically fitted together. Items __ and __ matched in <u>physical and chemical properties</u> and could have had a common origin. (Or shape, construction, design characteristics, and so forth, as applicable.)	
7.6.2.2.3	Disassociation: Items __ and __ could not be associated due to _____ . (color, width, construction, thickness, etc.)	
7.6.2.2.4	Most important is to give a reason for the disassociation which could be of investigative importance to the investigating officer.	
◆End		